

# Eagle Mountain Reservoir

## 2020 Fisheries Management Survey Report

PERFORMANCE REPORT

As Required by

FEDERAL AID IN SPORT FISH RESTORATION ACT

TEXAS

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INLAND FISHERIES DIVISION MONITORING AND MANAGEMENT PROGRAM

Prepared by:

Thomas Hungerford, Assistant District Management Supervisor,

Cynthia Holt, Assistant District Management Supervisor,

and

Raphael Brock, District Management Supervisor

Inland Fisheries Division

Dallas/Fort Worth District, Fort Worth, Texas

Carter Smith  
Executive Director

Craig Bonds  
Director, Inland Fisheries

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## Survey and Management Summary

Fish populations in Eagle Mountain Reservoir were surveyed in 2020 using trap nets and electrofishing, and in 2021 using gill nets. Historical data are presented with the 2020-2021 data for comparison. This report summarizes the results of the surveys and contains a management plan for the reservoir based on those findings.

- **Reservoir Description:** Eagle Mountain Reservoir is an 8,504-acre impoundment constructed on the West Fork Trinity River by the Tarrant Regional Water District (TRWD) in 1932 for municipal and industrial purposes. The reservoir is located in northwest Fort Worth, is approximately 10 miles long and 3.5 miles wide (widest point), drains 1,970 square miles of watershed, and has 93.5 miles of shoreline. Conservation pool elevation is 649 feet above mean-sea-level resulting in a storage capacity at conservation pool of 179,880 acre-feet. Water level has remained near conservation pool since 2015. Boat access is good but shoreline angling access is limited. There is one ADA compliant fishing pier on the reservoir. Fishery habitat consisted primarily of natural banks, rocky shorelines, and boat docks. Eagle Mountain was deemed as infested with Zebra Mussels in 2016.
- **Management History:** Important sport fishes include Largemouth Bass, crappies, White Bass, and Blue and Channel Catfish. All species are managed with statewide regulations. Florida Largemouth Bass were stocked in 2014 and 2015.

### Fish Community

- **Prey species:** Gizzard and Threadfin Shad were in high relative abundance in the reservoir. Bluegill and Longear Sunfish are also available as prey. Some Bluegill over 6 inches are available for anglers.
- **Catfishes:** Blue Catfish relative abundance remained high and produced some large individuals. The relative abundance of Channel Catfish was variable during the past three surveys but remained low. Although present, no Flathead Catfish were sampled during 2021 gill netting.
- **White Bass:** White Bass catch rates remained relatively stable compared to the three previous surveys.
- **Black basses:** The Spotted Bass population has decreased during the last three surveys. The Largemouth Bass population has also decreased in abundance during the last three surveys, however, a new waterbody record of 13.08 pounds was caught and donated to the Toyota Sharelunker Program in March of 2021.
- **Crappies:** The relative abundance of White Crappie sharply increased since the 2016 survey. Black Crappie relative abundance also greatly increased in 2020 as compared with the 2016 survey.
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**Management Strategies:** Monitor zebra mussels in Eagle Mountain Reservoir. General monitoring with gill netting, trap netting, and electrofishing will be conducted in 2024-2025.

## Introduction

This document is a summary of fisheries data collected from Eagle Mountain Reservoir in 2020-2021. The purpose of the document is to provide fisheries information and make management recommendations to protect and improve the sport fishery. While information on other species of fishes was collected, this report deals primarily with major sport fishes and important prey species. Historical data are presented with the 2020-2021 data for comparison.

## Reservoir Description

Eagle Mountain Reservoir is an 8,504-acre impoundment constructed on the West Fork Trinity River by the Tarrant Regional Water District (TRWD) in 1932 for municipal and industrial purposes. The reservoir is located in northwest Fort Worth, is approximately 10 miles long and 3.5 miles wide (widest point), drains 1,970 square miles of watershed, and has 93.5 miles of shoreline. Conservation pool elevation is 649 feet above mean-sea-level resulting in a storage capacity at conservation pool of 179,880 acre-feet. Water level has fluctuated widely but has remained near conservation pool since 2015 (Figure 1). Eagle Mountain Reservoir was hypereutrophic with a mean TSI chl-a of 61.04 (Texas Commission on Environmental Quality 2019). Texas Parks and Wildlife Department sold a tract of land that was proposed to be developed into a state park on the reservoir to the TRWD in 2008. TRWD has developed some hiking and biking trails but no angler access was incorporated in order to maintain the natural state of the area. Fishery habitat consisted primarily of natural banks, rocky shorelines, and boat docks. Other descriptive characteristics for Eagle Mountain Reservoir are in Table 1.

## Angler Access

Eagle Mountain Reservoir has 9 public boat ramps. Several are not useable during periods of low water. Extension of the ramps may not be feasible unless dredging takes place. The TRWD renovated the park at Twin Points beginning in the fall of 2009. A two-lane boat ramp with parking for approximately 60 vehicles opened in May of 2013. In 2015, a larger park opened to the public allowing shoreline angling as well. There is one ADA compliant fishing pier on the reservoir. Additional boat ramp characteristics are in Table 2. Shoreline access is very limited and restricted to the public boat ramp areas.

## Management History

**Previous management strategies and actions:** Management strategies and actions from the previous survey report (Hungerford and Brock 2017) included:

1. Communicate with TRWD regarding posting of signs educating the public about the spread of aquatic nuisance species. Contact marina operators and emphasize the importance of cleaning, draining, and drying vessels when leaving all reservoirs to reduce risk of spreading zebra mussels.

**Action:** Signs were distributed to TRWD for distribution at public access points. We made a speaking point when talking to the public the importance of cleaning, draining, and drying vessels prior to launching at other reservoirs.

**Harvest regulation history:** Sport fish populations in Eagle Mountain Reservoir have always been managed with statewide regulations (Table 3).

**Stocking history:** The last stocking of Eagle Mountain Reservoir occurred in 2015 and consisted of Florida Largemouth Bass. The complete stocking history is in Table 4.

**Vegetation/habitat management history:** Eagle Mountain Reservoir has limited aquatic vegetation and consists primarily of native emergent species such as lotus, cattail, and some *Scirpus*.

**Water transfer:** Eagle Mountain is directly downstream of Bridgeport Reservoir on the West Fork of the Trinity River. Water can be transferred to Eagle Mountain via a pipeline of mixed water from Cedar Creek and Richland Chambers Reservoirs in East Texas (all within the Trinity River watershed).

**Zebra mussels:** Since 2016, Eagle Mountain Reservoir has been considered infested with zebra mussels.

## Methods

Surveys were conducted to achieve survey and sampling objectives in accordance with the objective-based sampling (OBS) plan for Eagle Mountain Reservoir (Hungerford et al. 2017). Primary components of the OBS plan are listed in Table 5. All survey sites were randomly selected and all surveys were conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2017).

**Electrofishing** – Black Basses, Sunfishes, Gizzard Shad, and Threadfin Shad were collected by electrofishing (1.4 hours at 17, 5-min stations). Catch per unit effort (CPUE) for electrofishing was recorded as the number of fish caught per hour (fish/h) of actual electrofishing.

**Trap netting** – Crappie were collected using trap nets (10 net nights at 10 stations). CPUE for trap netting was recorded as the number of fish caught per net night (fish/nn).

**Gill netting** – Blue and Channel Catfish and White Bass were collected by gill netting (10 net nights at 10 stations). CPUE for gill netting was recorded as the number of fish caught per net night (fish/nn).

**Low-frequency electrofishing** – Blue Catfish were collected by low-frequency electrofishing at 24 stations. The minimum duration of electrofishing at each station was 5 minutes. CPUE for electrofishing was recorded as the number of fish caught per hour (fish/h) of actual electrofishing.

**Genetics** – Genetic analysis of Largemouth Bass was conducted according to the Fishery Assessment Procedures (TPWD, Inland Fisheries Division, unpublished manual revised 2017). Genetic composition of individual Largemouth Bass was estimated using Micro-satellite DNA analysis beginning in 2005 and using electrophoresis prior to 2005.

**Statistics** – Sampling statistics (CPUE for various length categories), structural indices [Proportional Size Distribution (PSD), terminology modified by Guy et al. 2007], and condition indices [relative weight ( $W_r$ )] were calculated for target fishes according to Anderson and Neumann (1996). Index of Vulnerability (IOV) was calculated for Gizzard Shad (DiCenzo et al. 1996). Standard error (SE) was calculated for structural indices and IOV. Relative standard error ( $RSE = 100 \times SE \text{ of the estimate/estimate}$ ) was calculated for all CPUE and creel statistics.

**Habitat** – A structural habitat survey was last conducted in 2008. No large-scale changes to structural habitat were observed during the study period, thus a structural habitat survey was not conducted. A vegetation survey was not conducted during the study period.

**Water level** – Source for water level data was the United States Geological Survey (USGS 2021).

## Results and Discussion

**Prey species:** The 2020 electrofishing catch rates of Gizzard Shad and Bluegill were 458.1/h and 160.2/h, respectively. The total CPUE of Gizzard Shad was higher than the 2016 survey. Index of Vulnerability for Gizzard Shad was good, indicating that 83% of Gizzard Shad were available to existing predators; this was similar to IOV estimates in previous years (Figure 2). Total CPUE of Bluegill (160.2/h) in 2020 was similar to the total CPUE from the previous survey but lower than 2012 (Figure 3). The CPUE of Bluegill over 6 inches increased to 39.0/h compared to the previous two surveys, indicating some opportunities for panfish anglers. Total CPUE of Threadfin Shad was good (429.9/h) during the 2020 survey (Appendix A).

**Catfishes:** The gill net catch rate of Blue Catfish was 19.7/nn in 2021, which is similar to the previous two surveys (Figure 4). Blue Catfish body condition ( $W_r$ ) ranged from 90 to 110 and generally increased with total length. The size structure of the Blue Catfish population shifted towards larger individuals as evidenced by the mode moving from 7-8 inches in 2017 to 14-15 inches in 2021. The low-frequency electrofishing catch rates of stock-size (12 inches and larger) Blue Catfish were 34.6/h and 47.4/h in 2018 and 2020, respectively (Figure 5). Despite solid relative standard errors on relative abundance estimates

with low-frequency electrofishing, we have decided not to continue biennial surveys and continue gill netting surveys every 4 years. Gill netting captures more target species and thus is more efficient.

The gill net catch rate of Channel Catfish was 3.5/nn in 2021. The Channel Catfish population remained in relatively low abundance similar to the 2017 survey and lower than the 2013 survey (Figure 6).

**Temperate Basses:** The gill net catch rate of White Bass (5.8/nn) in 2021, was lower than the two previous surveys (Figure 7). Mean relative weights were optimal, exceeding 90 for most inch classes.

One Yellow Bass was collected during the 2013 gill netting survey marking the first record of the species in Eagle Mountain Reservoir. The most likely source of introduction is the TRWD pipeline that moves water from Richland-Chambers and Cedar Creek Reservoirs in East Texas. This pipeline also moves water to Benbrook and Arlington Reservoirs which also now have established populations of Yellow Bass. The gill netting catch rate of Yellow Bass was 7.7/nn in 2021 (Appendix A) indicating a growing population.

**Black Basses:** The electrofishing catch rate of Spotted Bass was 5.6/h in 2020, which was lower than the two previous surveys (Figure 8). Spotted Bass continue to persist as a low-density fishery in the rocky areas of Eagle Mountain Reservoir.

The total electrofishing catch rate of Largemouth Bass of 61.3/h and stock-length CPUE of 43.8/h in 2020 were both lower than the previous two surveys (Figure 9). Body condition in 2020 was variable for legal-length fish, but above 90 for all size classes of fish. Genetic data were not collected during this four-year survey period (Table 12). The objective of obtaining a relative standard error of 25 or less for total CPUE of Largemouth Bass was achieved in 17 stations. In March 2021, a new waterbody record Largemouth Bass was caught and donated to the Toyota Sharelunker Program at the Texas Freshwater Fisheries Center in Athens. The fish weighed 13.08 pounds and was determined to be a pure Florida Largemouth Bass.

**Crappies:** The trap net catch rate of White Crappie was 12.3/nn in 2020 (Figure 10), much higher than in 2016 (1.1/nn) and in 2012 (0.6/nn). Catch per unit effort of White Crappie 10 inches and larger was 4.3/nn in 2020 (Figure 10). The PSD of 91 indicates the size structure is skewed towards larger individuals.

The total trap net catch rate of Black Crappie was 6.4/nn, which was much higher than the 2016 survey and similar to the 2012 survey (Figure 11). The majority of Black Crappie sampled in 2020 were below 10 inches. The mean relative weights were generally between 90 and 100.

# Fisheries Management Plan for Eagle Mountain Reservoir, Texas

Prepared – July 2021

**ISSUE 1:** Declining water quality and aquatic habitat in America's reservoirs is an issue of great local significance and even greater national concern. As Eagle Mountain reservoir continues to age, habitat degradation is ongoing.

## MANAGEMENT STRATEGIES

1. Cooperate and communicate with TRWD regarding opportunities to improve existing fish habitat.
2. Submit requests for adding artificial habitat as funding opportunities arise.

**ISSUE 2:** Many invasive species threaten aquatic habitats and organisms in Texas and can adversely affect the state ecologically, environmentally, and economically. For example, zebra mussels (*Dreissena polymorpha*) can multiply rapidly and attach themselves to any available hard structure, restricting water flow in pipes, fouling swimming beaches, and plugging engine cooling systems. Giant salvinia (*Salvinia molesta*) and other invasive vegetation species can form dense mats, interfering with recreational activities like fishing, boating, skiing, and swimming. The financial costs of controlling and/or eradicating these types of invasive species are significant. Additionally, the potential for invasive species to spread to other river drainages and reservoirs via watercraft and other means is a serious threat to all public waters of the state.

## MANAGEMENT STRATEGIES

3. Cooperate with the TRWD to maintain appropriate signage at access points around the reservoir.
4. Contact and educate marina owners about invasive species, and provide them with posters, literature, etc.... so that they can in turn educate their customers.
5. Educate the public about invasive species through the use of media and the internet.
6. Make a speaking point about invasive species when presenting to constituent and user groups.
7. Keep track of (i.e., map) existing and future inter-basin water transfers to facilitate potential invasive species responses.



## Objective-Based Sampling Plan and Schedule (2021–2025)

### Sport fish, forage fish, and other important fishes

Important sport fishes in Eagle Mountain Reservoir include Largemouth Bass, Blue Catfish, White Bass, Crappie species. Known important forage species include Bluegill, Longear Sunfish, and Threadfin and Gizzard Shad.

### Low density fisheries

**Spotted Bass:** Spotted Bass are present in rocky areas of Eagle Mountain Reservoir, however, according to an annual creel survey conducted in 2016/2017, there was no directed effort for them. We will record CPUE and size structure data from all Spotted Bass coincidentally captured by electrofishing surveys directed at Largemouth Bass.

**Channel Catfish:** Channel Catfish had just 1.7% directed effort during the 2016/2017 year-long creel survey and relative abundance is low. The past three gill netting surveys have produced an average CPUE-stock of just 4.2 fish/nn with highly variable RSEs. Catch per unit effort and body condition data will be collected from all Channel Catfish coincidentally captured in gill netting surveys conducted for White Bass and Blue Catfish.

**Flathead Catfish:** Flathead Catfish are present in Eagle Mountain Reservoir, however, there was no directed effort for them in the 2016/2017 creel survey. We will record CPUE and size structure data from all Flathead Catfish coincidentally collected by gill nets targeting White Bass and Blue Catfish.

### Survey objectives, fisheries metrics, and sampling objectives

**Blue Catfish:** Blue Catfish were the second most sought-after sport fish during the 2016/2017 year-long creel survey at Eagle Mountain Reservoir. Total harvest of Blue Catfish was 783 fish during that same period. Historically, 10 random gill net nights have provided good relative abundance and size structure data with RSEs very near to the target objective of 25. A standard gill net survey with 10 net nights will be conducted in spring 2025 and we will calculate all CPUE and body condition data. Based on past catch rates, this should be adequate to obtain an RSE of CPUE-S  $\leq 25$  for Blue Catfish (PSD; 50 fish minimum at 10 stations with 80% confidence). If RSE objectives are not met no additional gillnetting will be conducted. No objective will be set for size structure information.

**White Bass:** Data on White Bass will be collected when the gillnet survey is conducted in the spring of 2025 using 10 gillnet net nights at 10 randomly selected stations throughout Eagle Mountain Reservoir. Sampling objectives will be limited to general monitoring trend data (without precision or sample size requirements).

**Largemouth Bass:** Largemouth Bass are the most sought-after species at Eagle Mountain Reservoir according to the 2016/2017 year-long creel survey. Tournament angling accounted for about 20% of total angling effort at Eagle Mountain during that same period. Trend data on CPUE, size structure, and body condition have been collected often since 1986 with fall nighttime electrofishing. Continuation of trend data every four years in this reservoir with night electrofishing in the fall will allow for determination of any large-scale changes in the Largemouth Bass population that may spur further investigation. A minimum of 18 randomly selected 5-min electrofishing sites will be sampled in 2024, but sampling will continue at random sites until 50 stock-size fish are collected and the RSE of CPUE-S is  $< 25$  (the anticipated effort to meet both sampling objectives is 15-18 stations with 80% confidence). If failure to achieve either objective has occurred after two nights of sampling and objectives can be attained with 6-12 additional random stations, another night of effort will be expended.

**Crappie:** Crappie relative abundance is increasing according to recent trap netting surveys, and anglers were targeting them as well as catching them. A 2016/2017 creel survey revealed that Crappie are the

sixth most sought-after sport fish in Eagle Mountain Reservoir, with 2.1% of all directed effort. We would like to collect information allowing us to monitor size structure. We feel single-cod, shoreline trap nets set are adequate for obtaining these data and will set 10 random trap nets in 2024.

**Prey species:** Bluegill, Longear Sunfish, Threadfin Shad, and Gizzard Shad are the primary forage at Eagle Mountain Reservoir. Like Largemouth Bass, trend data on CPUE and size structure of all four species have been collected often since 1986. Continuation of sampling, as per Largemouth Bass above, will allow for monitoring of large-scale changes in Bluegill, Longear Sunfish, Threadfin Shad, and Gizzard Shad relative abundance and size structure. Sampling effort based on achieving sampling objectives for Largemouth Bass will result in sufficient numbers of Bluegill, Longear Sunfish, Threadfin Shad, and Gizzard Shad for size structure estimation (IOV for Gizzard Shad only; 50 fish minimum at 5-12 stations with 80% confidence) At the sampling effort needed to achieve sampling objectives for Largemouth Bass, the expected RSE for CPUE-Total will likely be greater than 25 for Bluegill. No additional effort will be expended to achieve an RSE of 25 for CPUE of Bluegill and Gizzard Shad. Instead, Largemouth Bass body condition can provide information on forage abundance, vulnerability, or both relative to predator density. Relative weight of Largemouth Bass > 8" TL will be determined from their length/weight data (maximum of 10 fish weighed and measured per inch class).

## Literature Cited

- Anderson, R. O., and R. M. Neumann. 1996. Length, weight, and associated structural indices. Pages 447-482 in B. R. Murphy and D. W. Willis, editors. Fisheries techniques, 2<sup>nd</sup> edition. American Fisheries Society, Bethesda, Maryland.
- DiCenzo, V. J., M. J. Maceina, and M. R. Stimpert. 1996. Relations between Reservoir trophic state and gizzard shad population characteristics in Alabama reservoirs. North American Journal of Fisheries Management 16: 888-895.
- Guy, C. S., R. M. Neumann, D. W. Willis, and R. O. Anderson. 2007. Proportional Size Distribution (PSD): a further refinement of population size structure index terminology. Fisheries 32(7):348.
- Hungerford, T., C. Holt, and R. Brock 2017. Statewide freshwater fisheries monitoring and management program survey report for Eagle Mountain Reservoir, 2016. Texas Parks and Wildlife Department, Federal Aid Report F-221, Austin.
- Texas Commission on Environmental Quality. 2019. Trophic classification of Texas reservoirs. 2016 Texas Integrated Report for Clean Water Act Sections 305, Austin. 15 pp.
- United States Geological Society (USGS). 2021. National water information system: Web interface. Available: <http://waterdata.usgs.gov/tx/nwis> (July 2021).

## Tables and Figures

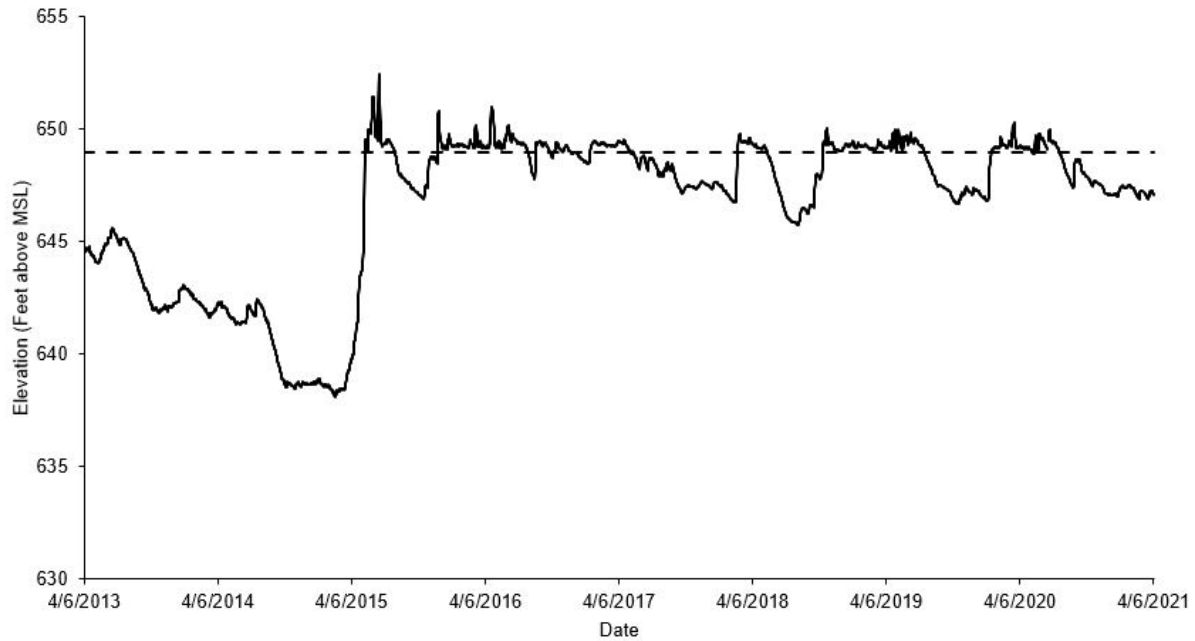


Figure 1. Mean monthly water level elevations in feet above mean sea level (MSL) recorded for Eagle Mountain Reservoir, Texas from April 2013-April 2021. Conservation pool is 649 feet above MSL (dashed line).

Table 1. Characteristics of Eagle Mountain Reservoir, Texas.

Characteristic	Description
Year constructed	1932
Controlling authority	Tarrant Regional Water District
Counties	Tarrant, Wise
Reservoir type	Mainstream Trinity River (West Fork)
Conductivity	344 $\mu\text{S}/\text{cm}$

Table 2. Boat ramp characteristics for Eagle Mountain Reservoir, Texas, fall 2020. Reservoir elevation at time of survey was 649.1 feet above mean sea level. N/A indicates data not available.

Boat ramp	Latitude Longitude (dd)	Public	Parking capacity (N)	Elevation at end of boat ramp (ft)	Condition
West Bay Marina	32.93417 -97.51397	Y	50	640.1	Good.
Lakeview Marina	32.94834 -97.50889	Y	20	636.1	Good.
Creek Harbor Camp	32.96341 -97.48969	Y	17	N/A	Poor. Very shallow area.
Shady Grove Park	32.90811 -97.52989	Y	35	644.2	Poor. Very shallow area
Pelican Bay Ramp	32.91081 -97.51864	Y	25	642.9	Poor. Very shallow area.
Eagle Mountain Marina	32.86758 -97.50506	Y	125	638.5	Good.
Augie's	32.87235 -97.49708	Y	50	643.2	Good.
Twin Points	32.87562 -97.49323	Y	60	639.1	Good.
Harbor One Marina	32.89495 -97.44658	Y	20	639.8	Good.

Table 3. Harvest regulations for Eagle Mountain Reservoir, Texas.

Species	Bag Limit	Length Limit (inches)
Catfish: Channel and Blue Catfish, their hybrids and subspecies	25 (in any combination)	12-minimum (Channel)
Catfish, Flathead	5	18-minimum
Bass, White	25	10-minimum
Bass: Spotted	5 <sup>a</sup> (in any combination)	none
Bass: Largemouth		14-minimum
Crappie: White and Black Crappie, their hybrids and subspecies	25 (in any combination)	10-minimum

<sup>a</sup> Daily bag for Largemouth Bass, Spotted Bass, and Guadalupe Bass = 5 fish in any combination.

Table 4. Stocking history for Eagle Mountain Reservoir, Texas. Life stages are fry (FRY), fingerlings (FGL), advanced fingerlings (AFGL), adults (ADL) and unknown (UNK). Life stages for each species are defined as having a mean length that falls within the given length range. For each year and life stage the species mean total length (Mean TL; in) is given. For years where there were multiple stocking events for a particular species and life stage the mean TL is an average for all stocking events combined.

Species	Year	Number	Life Stage	Mean TL (in)
Blue Catfish	1991	92,147	FGL	2.1
	Total	92,147		
Channel Catfish	1969	48,000	AFGL	7.9
	1970	60,000	AFGL	7.9
	1971	10,964	AFGL	7.9
	1972	9,000	AFGL	7.9
	1973	200	UNK	0.0
	1979	10,095	AFGL	7.9
	Total	138,259		
Florida Largemouth Bass	1988	333,148	FRY	1.0
	1993	373,642	FGL	1.0
	1994	148,628	FGL	1.1
	2000	232,424	FGL	1.1
	2006	425,660	FGL	1.6
	2007	426,963	FGL	1.5
	2014	427,802	FGL	1.7
	2015	508,235	FGL	1.8
	Total	2,876,502		
Green Sunfish x Redear Sunfish	1970	8,000		0.0
	Total	8,000		

Table 4, continued

Species	Year	Number	Life Stage	Mean TL (in)
Largemouth Bass	1969	300,000	UNK	0.0
	1971	100,000	UNK	0.0
	1978	275	UNK	0.0
	Total	400,275		
Mixed Largemouth Bass	1988	127,095		1.0
	Total	127,095		
Smallmouth Bass	1978	84,800	UNK	0.0
	1979	34,460	UNK	0.0
	1980	1,200	UNK	0.0
	1999	197,905	FGL	1.5
	Total	318,365		
Threadfin Shad	1984	2,985	AFGL	3.0
	Total	2,985		
Walleye	1973	1,400,000	FRY	0.2
	1974	3,100,090	FRY	0.2
	1975	2,150,090	FRY	0.2
	Total	6,650,180		
White Crappie	1969	20,000	UNK	0.0
	Total	20,000		

Table 5. Objective-based sampling plan components for Eagle Mountain Reservoir, Texas 2020–2021.

Gear/target species	Survey objective	Metrics	Sampling objective
<i>Electrofishing</i>			
Largemouth Bass	Abundance	CPUE – stock	RSE-Stock $\leq 25$
	Size structure	PSD, length frequency	$N \geq 50$ stock
	Condition	$W_r$	10 fish/inch group (max)
Bluegill <sup>a</sup>	Abundance	CPUE – Total	RSE $\leq 25$
	Size structure	PSD, length frequency	$N \geq 50$
Gizzard Shad <sup>a</sup>	Abundance	CPUE – Total	RSE $\leq 25$
	Size structure	PSD, length frequency	$N \geq 50$
<i>Trap netting</i>			
Crappie	Size structure	PSD, length frequency	$N = 50$
<i>Gill netting</i>			
Blue Catfish	Abundance	CPUE	$N \geq 50$
	Size structure		$N \geq 50$ stock
Channel Catfish <sup>b</sup>	Abundance	CPUE– stock	RSE-Stock $\leq 25$
White Bass	Abundance	CPUE-stock	$N \geq 50$
	Size structure	PSD, length frequency	$N \geq 50$ stock
<i>Low-frequency electrofishing</i>			
Blue Catfish	Abundance	CPUE	RSE-Stock $\leq 25$
	Size structure	PSD	$N \geq 50$

<sup>a</sup> No additional effort will be expended to achieve an RSE  $\leq 25$  for CPUE of Bluegill and Gizzard Shad if not reached from designated Largemouth Bass sampling effort. Instead, Largemouth Bass body condition can provide information on forage abundance, vulnerability, or both relative to predator density.

<sup>b</sup> No additional effort will be expended to achieve an RSE  $\leq 25$  for CPUE of Channel Catfish if not reached from designated Blue Catfish sampling effort.



### Gizzard Shad

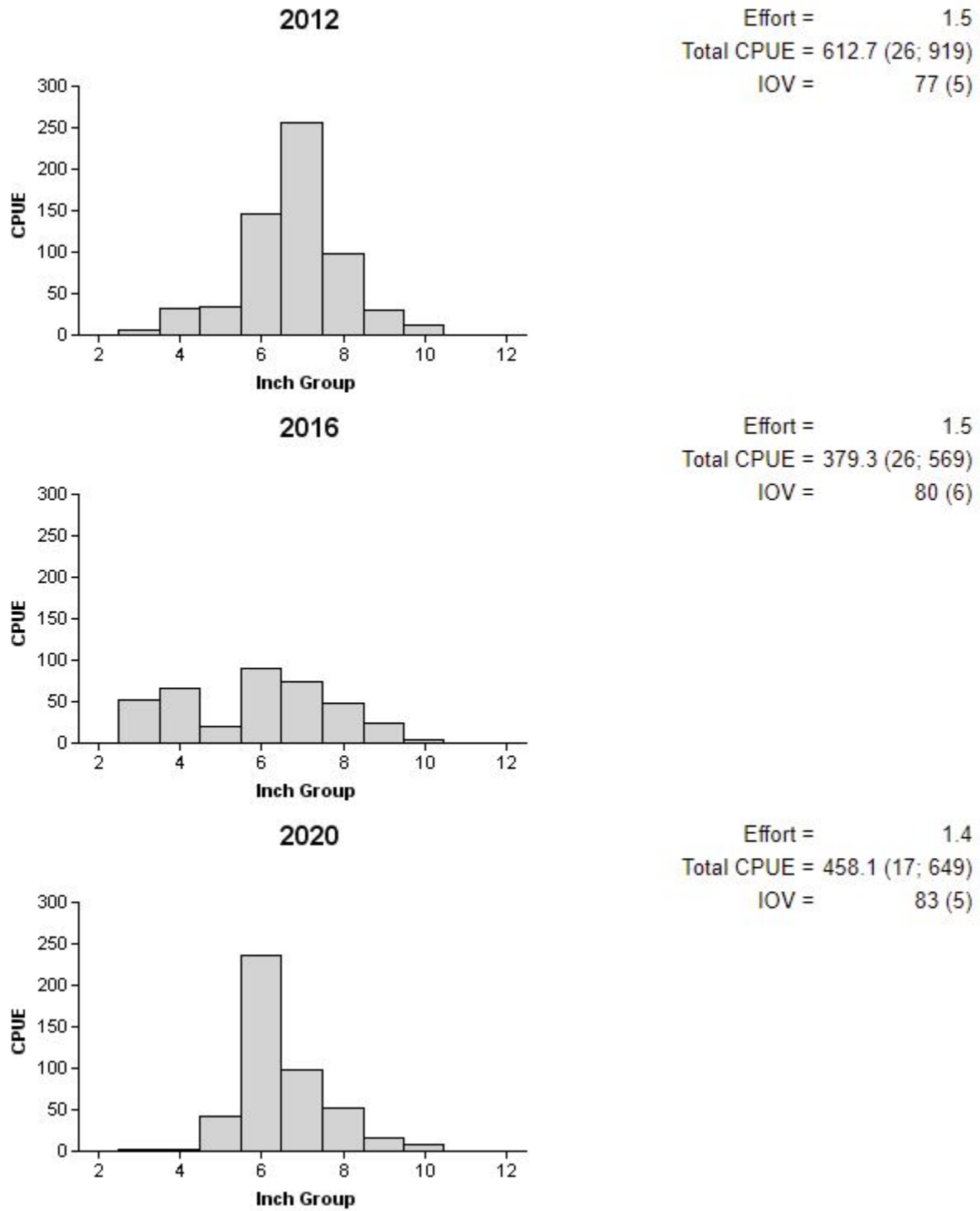


Figure 2. Number of Gizzard Shad caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for IOV are in parentheses) for fall electrofishing surveys, Eagle Mountain Reservoir, Texas, 2012, 2016, and 2020.

## Bluegill

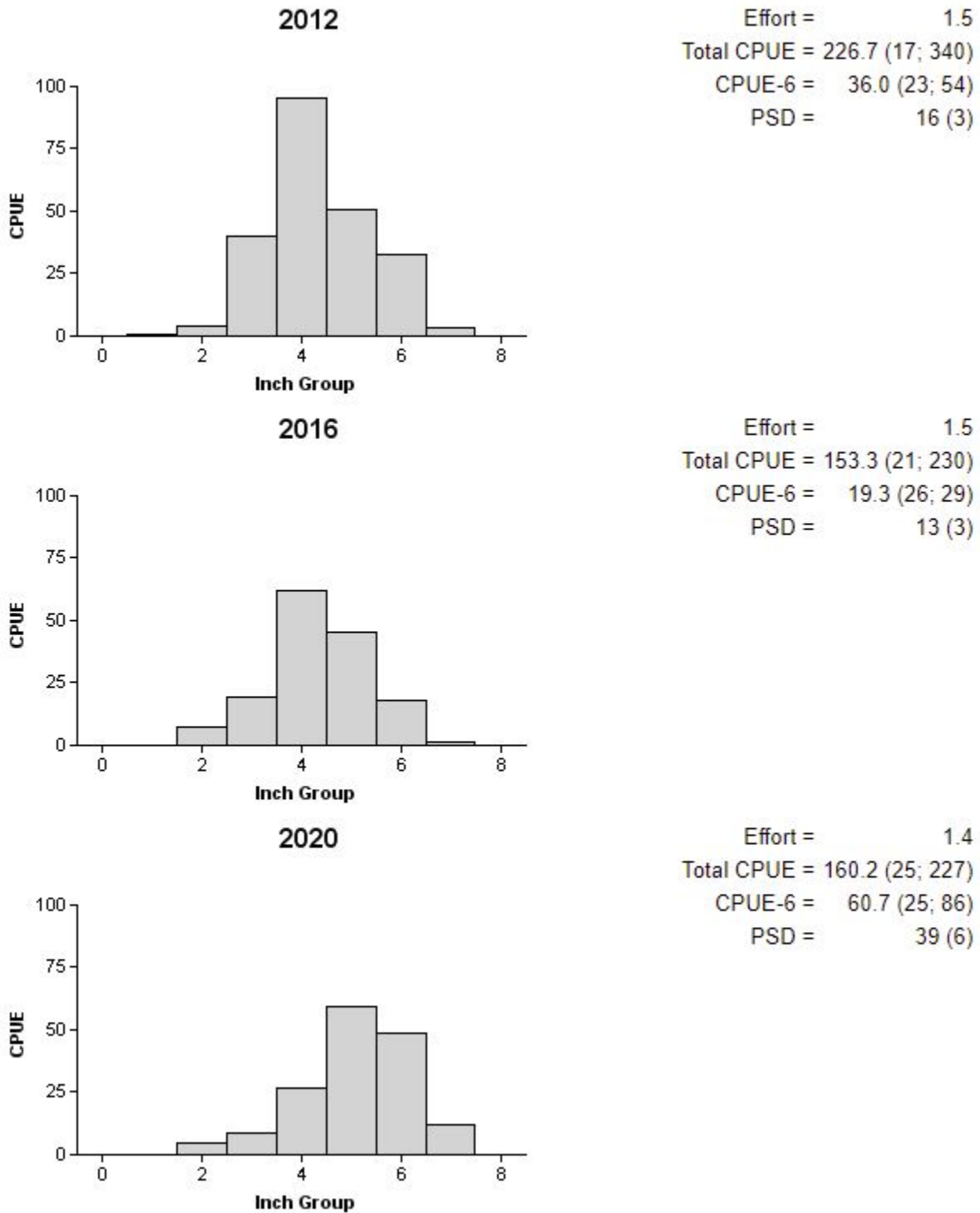


Figure 3. Number of Bluegill caught per hour (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Eagle Mountain Reservoir, Texas, 2012, 2016, and 2020.

## Blue Catfish

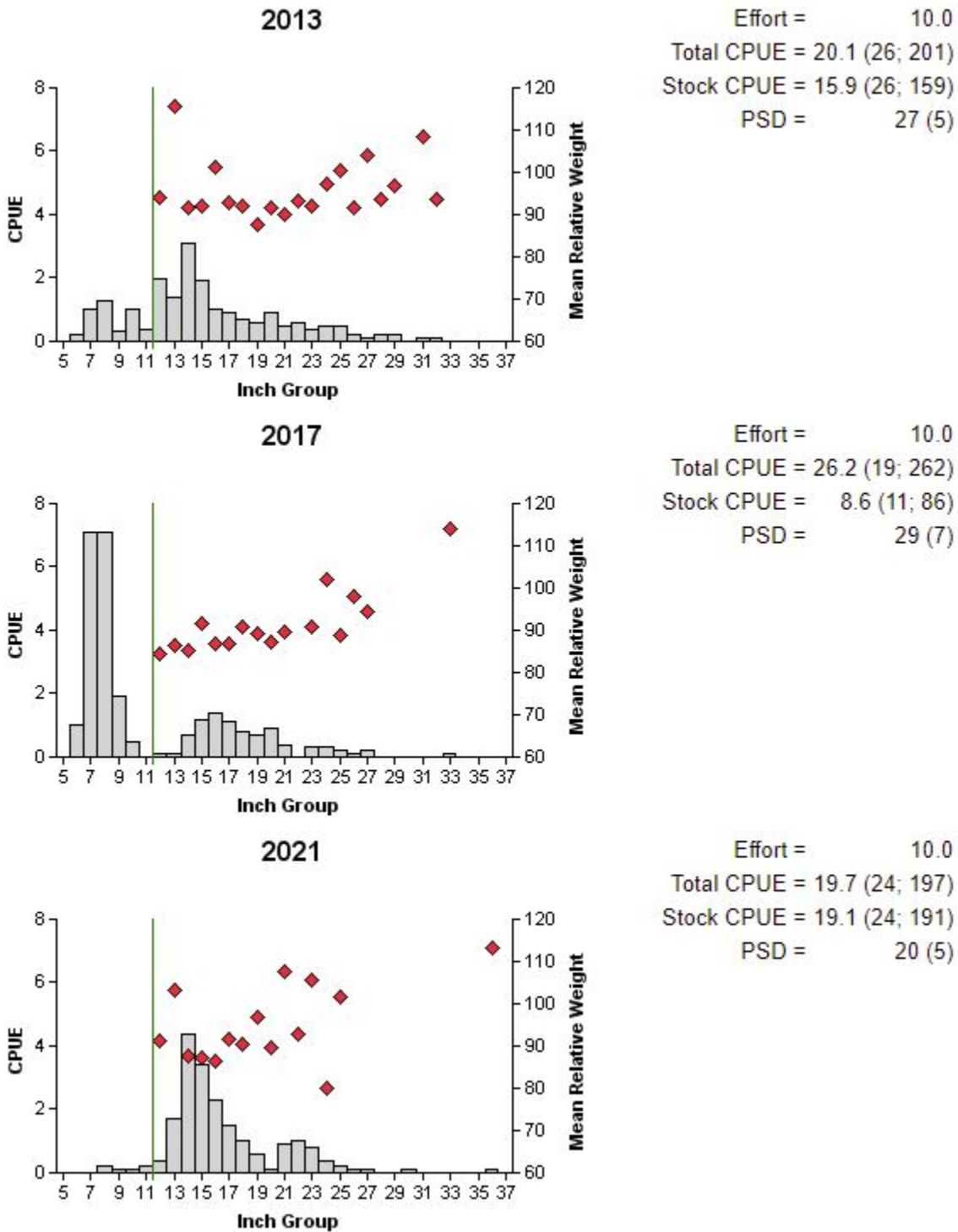


Figure 4. Number of Blue Catfish caught per net night (CPUE) mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Eagle Mountain Reservoir, Texas, 2013, 2017, and 2021. Solid vertical line indicates minimum length limit at time of sampling.

## Blue Catfish

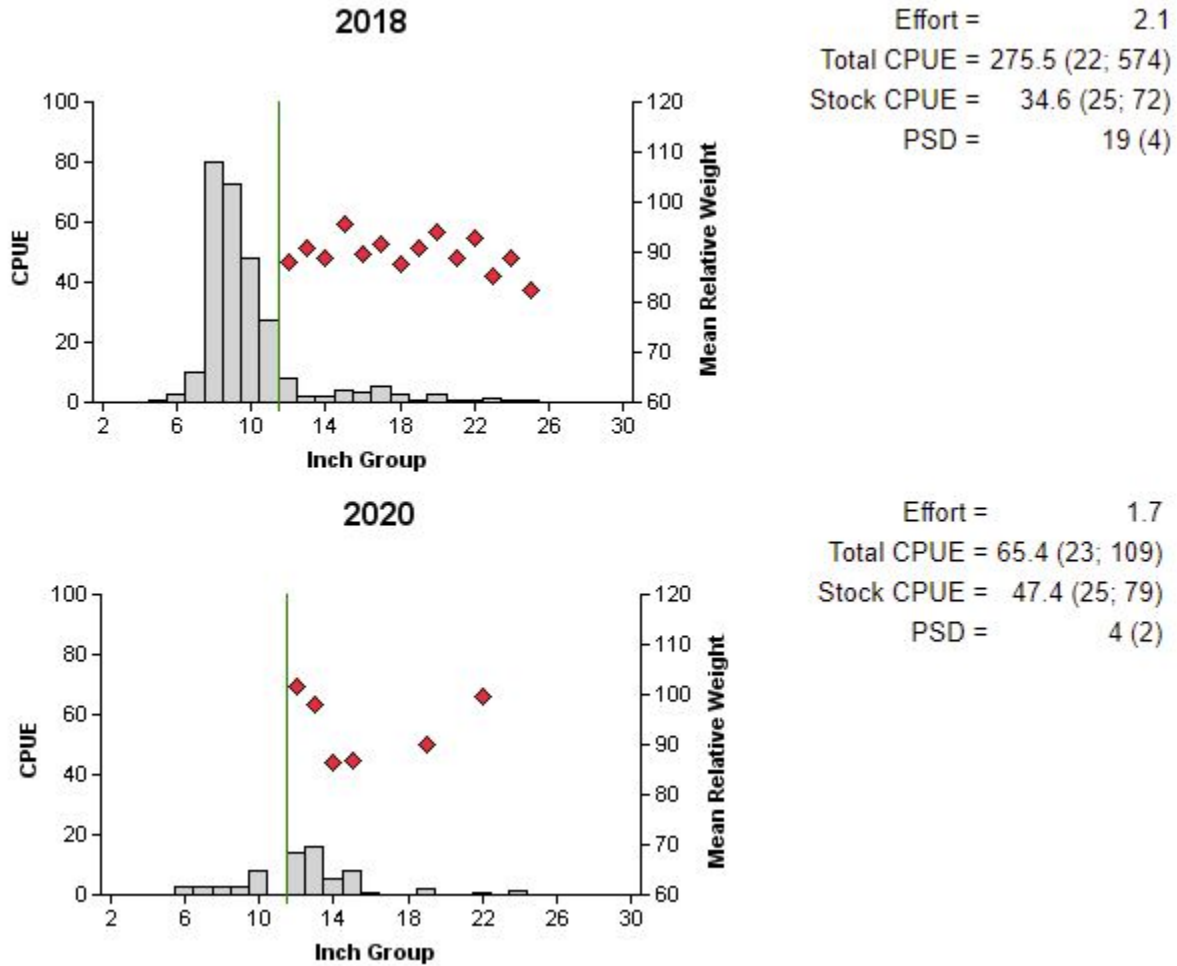


Figure 5. Number of Blue Catfish caught per hour (CPUE), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for summer low-pulse electrofishing surveys, Eagle Mountain Reservoir, Texas, 2018 and 2020. Solid vertical line indicates minimum length limit at time of sampling.

## Channel Catfish

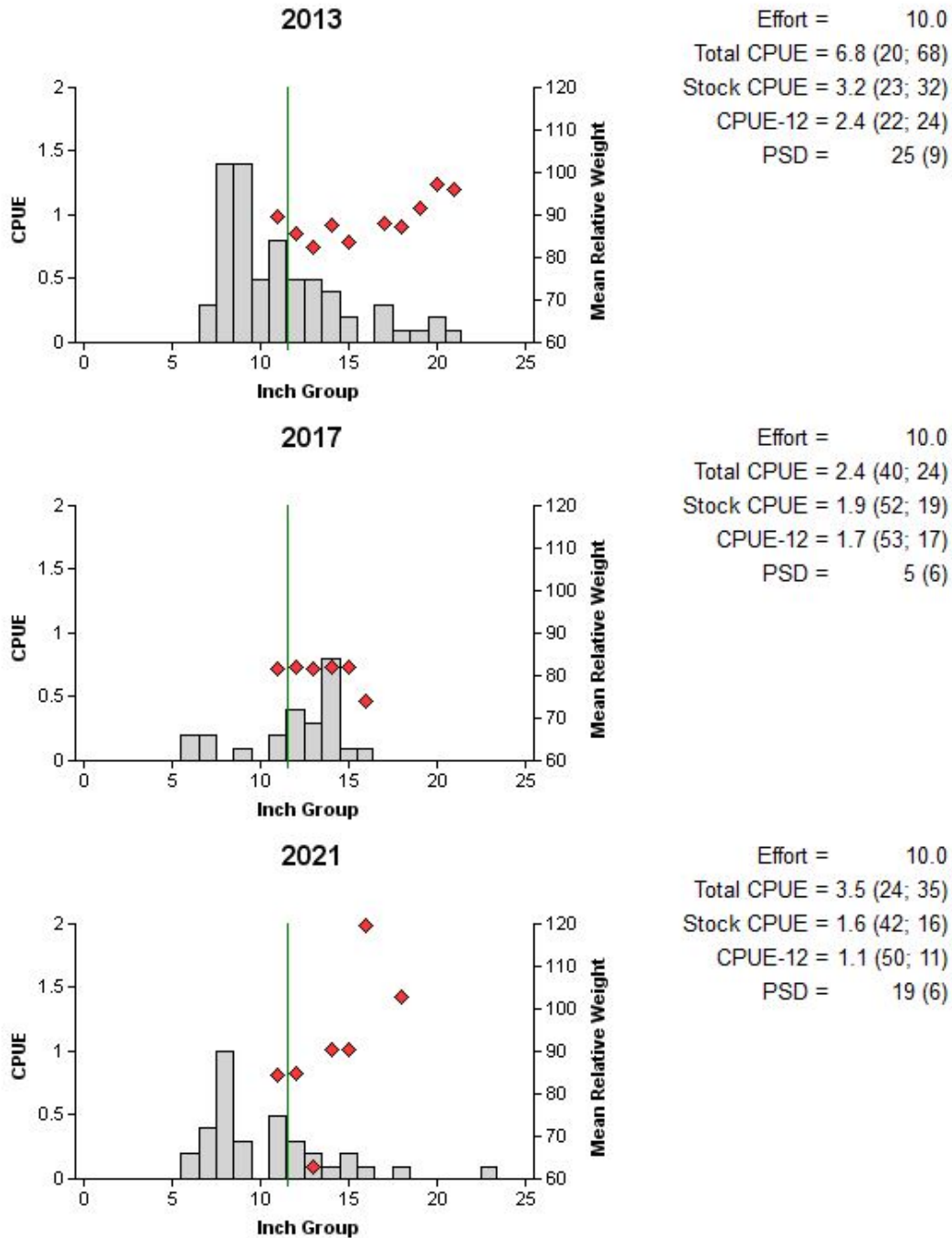


Figure 6. Number of Channel Catfish caught per net night (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Eagle Mountain Reservoir, Texas, 2013, 2017, and 2021. Solid vertical lines indicate minimum length limit at time of sampling.

White Bass

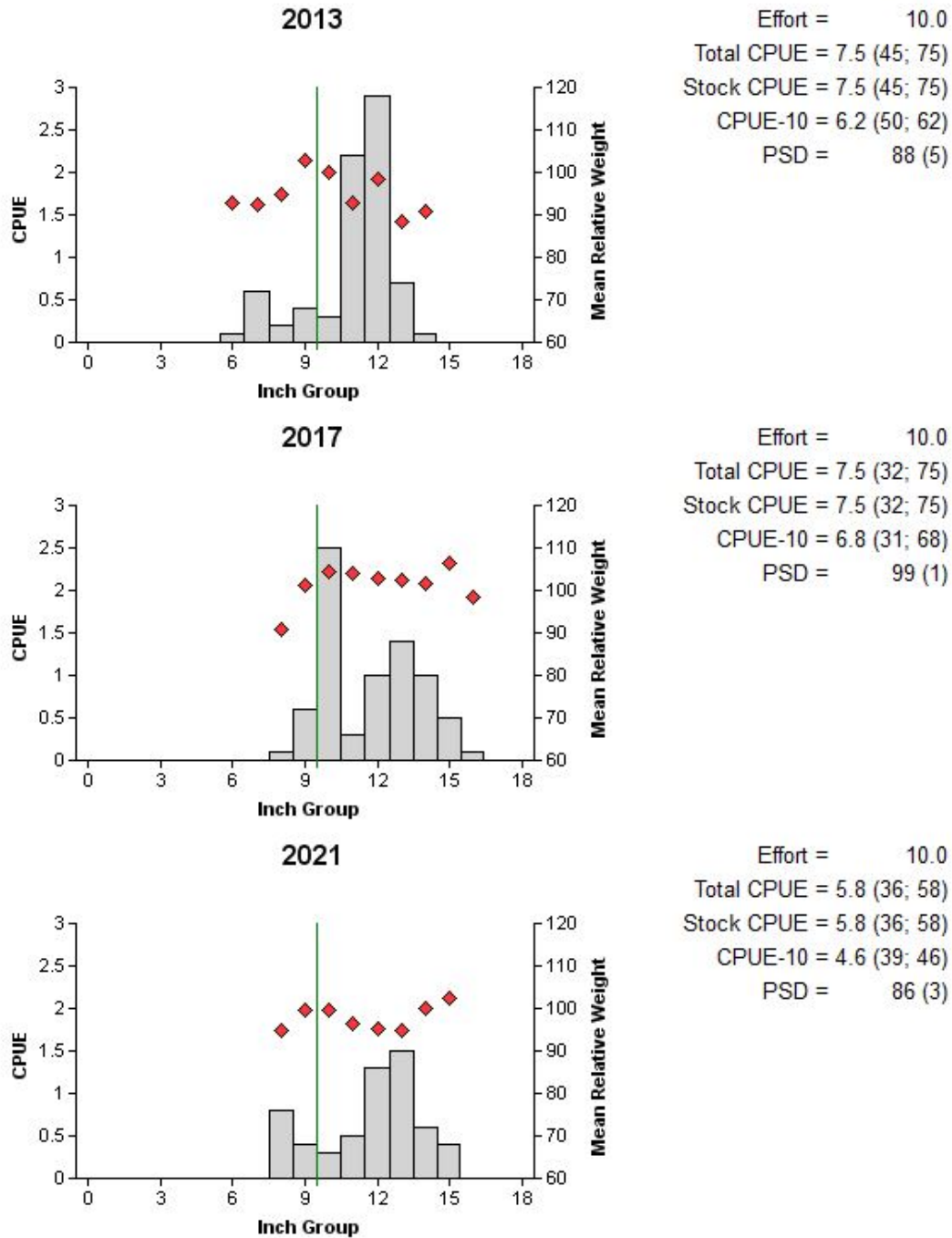


Figure 7. Number of White Bass caught per net night (CPUE) and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for spring gill net surveys, Eagle Mountain Reservoir, Texas, 2013, 2017, and 2021. Solid vertical lines indicate minimum length limit at time of sampling.

## Spotted Bass

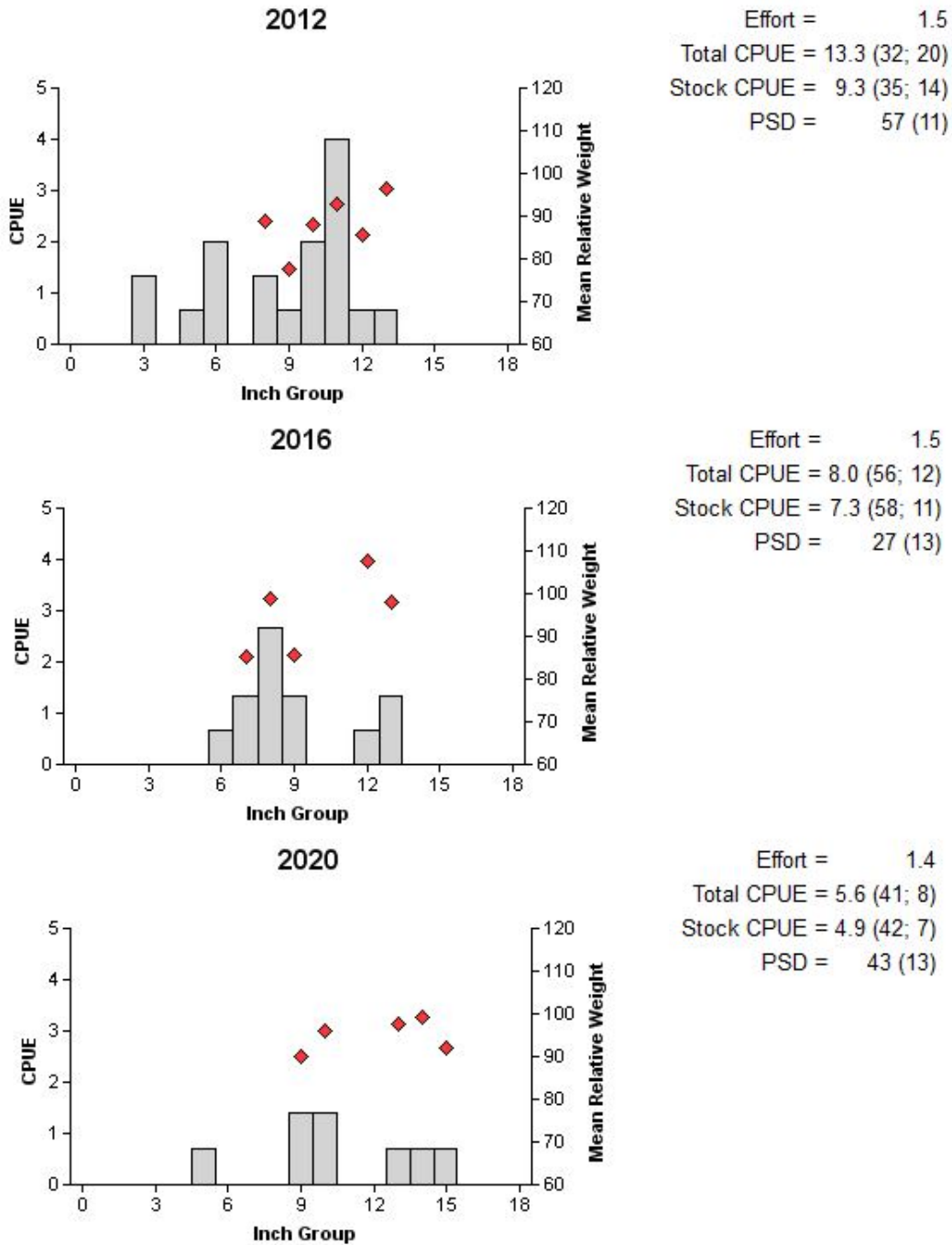


Figure 8. Number of Spotted Bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Eagle Mountain Reservoir, Texas, 2012, 2016, and 2020.

## Largemouth Bass

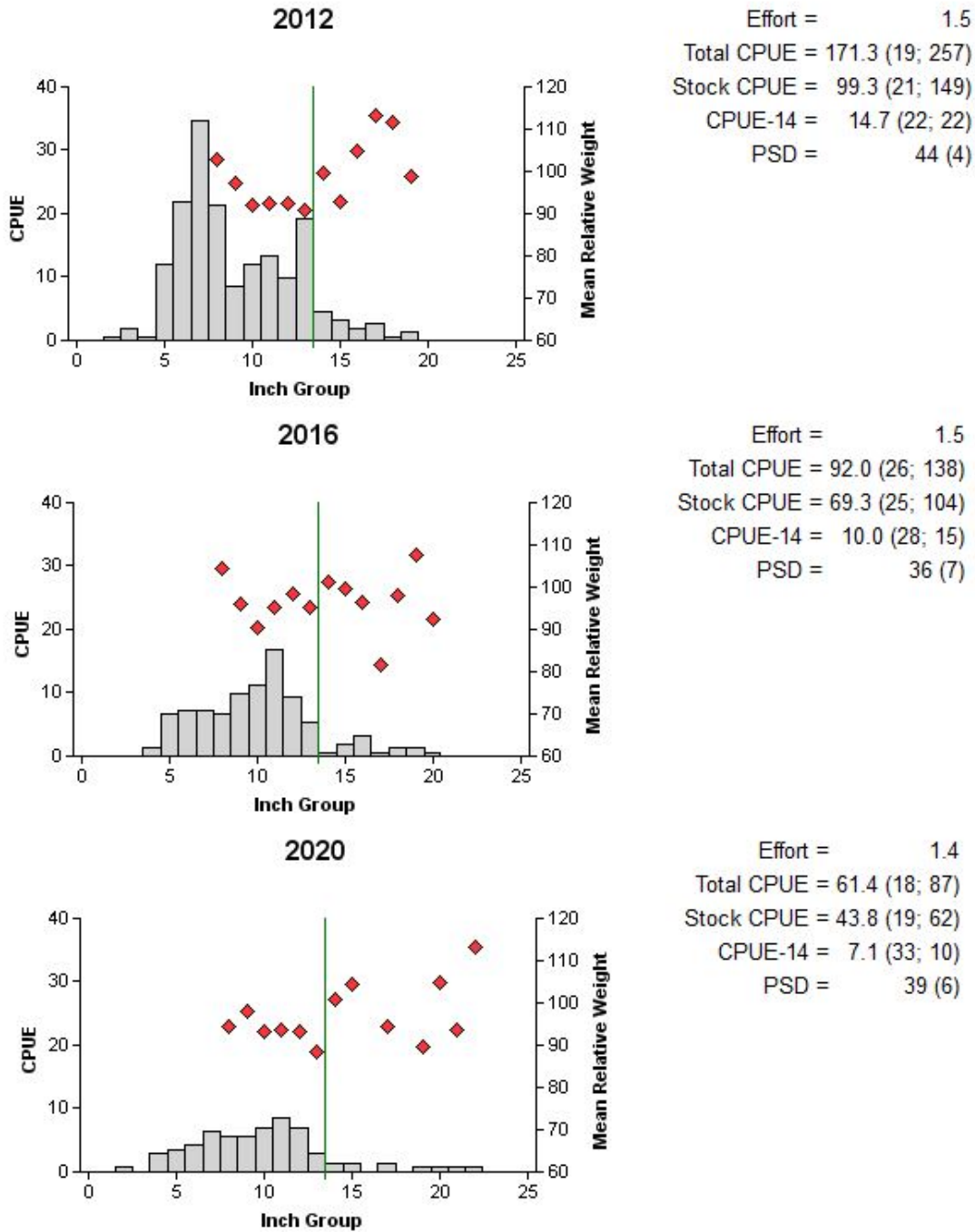


Figure 9. Number of Largemouth Bass caught per hour (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall electrofishing surveys, Eagle Mountain Reservoir, Texas, 2012, 2016, and 2020. Solid vertical lines indicate minimum length limit at time of sampling.



Table 6. Results of genetic analysis of Largemouth Bass collected by fall electrofishing, Eagle Mountain Reservoir, Texas, 2004, 2011, and 2016. FLMB = Florida Largemouth Bass, NLMB = Northern Largemouth Bass, Intergrade = hybrid between a FLMB and a NLMB. Genetic composition was determined by electrophoresis prior to 2005 and with micro-satellite DNA analysis since 2005.

Year	Sample size	Number of fish			% FLMB alleles	% pure FLMB
		FLMB	Intergrade	NLMB		
2004	30	1	21	8	29.2	3.3
2012	30	0	30	0	44.0	0.0
2016	30	1	28	1	43.0	3.3

## White Crappie

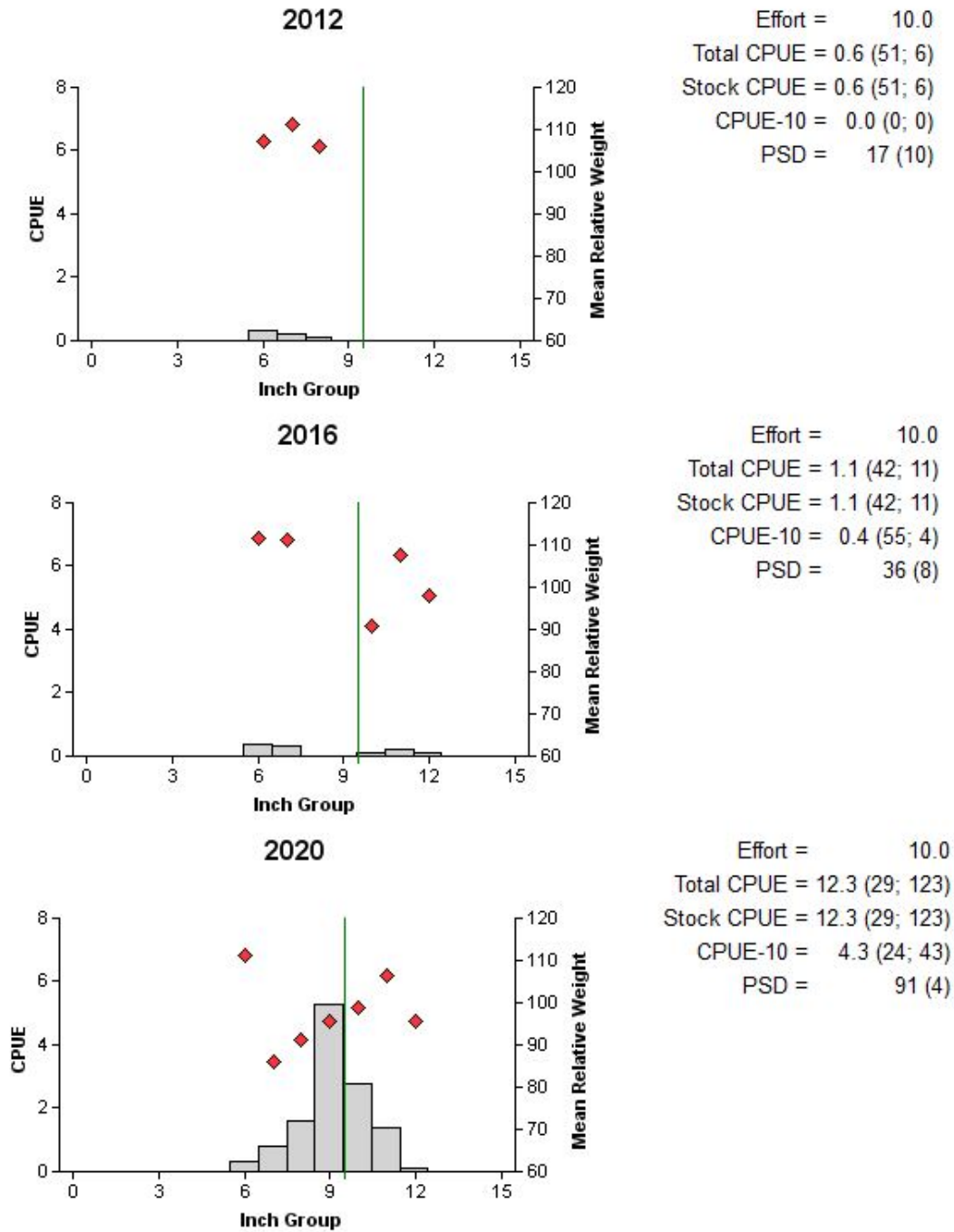


Figure 10. Number of White Crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap netting surveys, Eagle Mountain Reservoir, Texas, 2012, 2016, and 2020. Vertical line indicates minimum length limit.

## Black Crappie

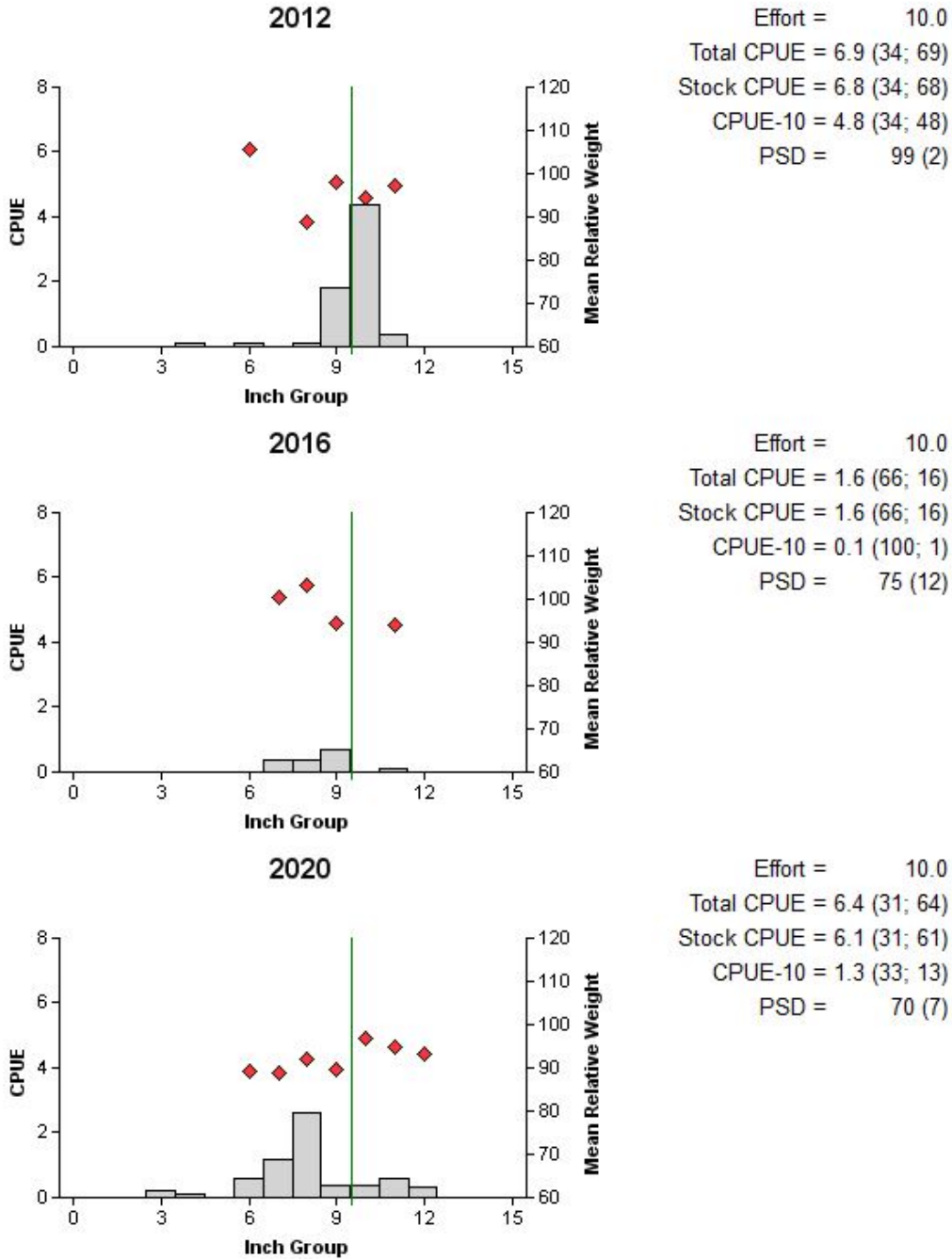


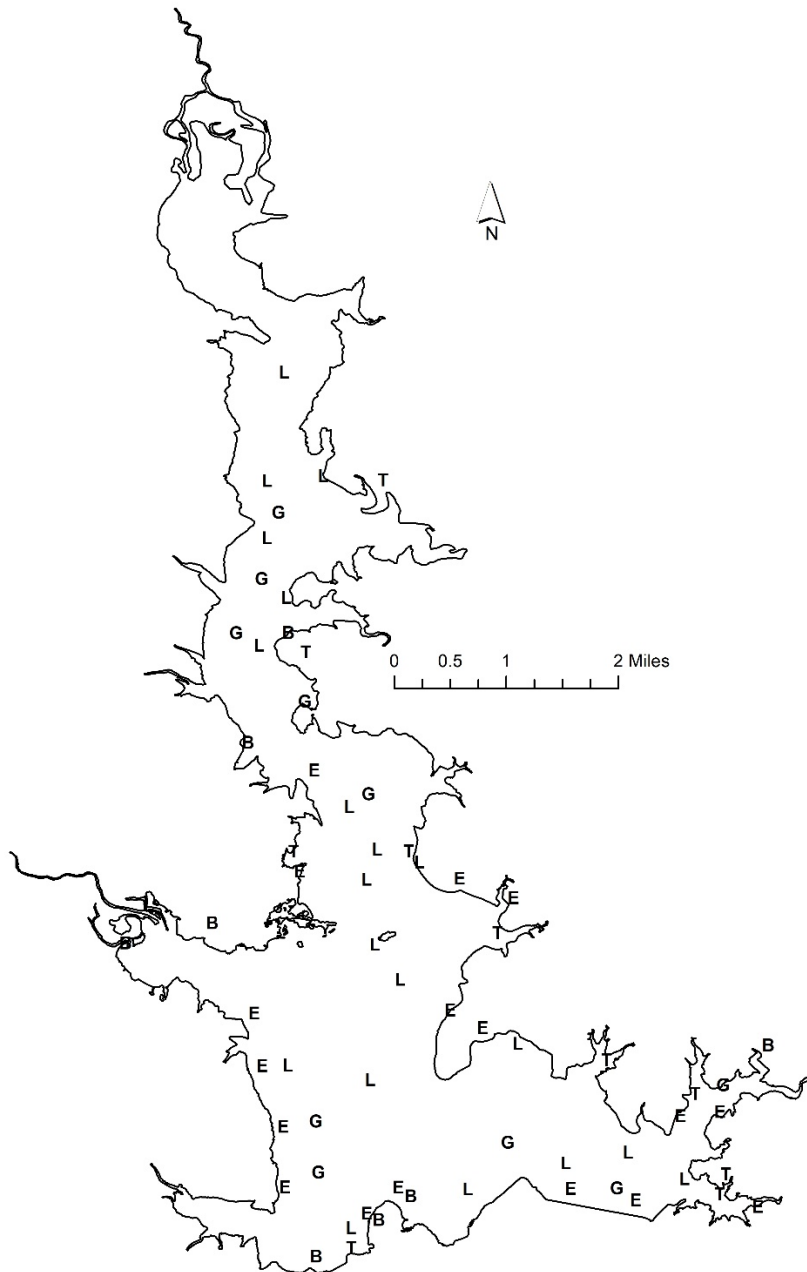
Figure 11. Number of Black Crappie caught per net night (CPUE, bars), mean relative weight (diamonds), and population indices (RSE and N for CPUE and SE for size structure are in parentheses) for fall trap netting surveys, Eagle Mountain Reservoir, Texas, 2012, 2016, and 2020. Vertical line indicates minimum length limit.

## Proposed Sampling Schedule

Table 7. Proposed sampling schedule for Eagle Mountain Reservoir, Texas. Survey period is June through May. Gill netting surveys are conducted in the spring, while electrofishing and trap netting surveys are conducted in the fall.

	Survey year			
	2021-2022	2022-2023	2023-2024	2024-2025
Angler Access				X
Structural Habitat				X
Vegetation				
Electrofishing – Fall				X
Trap netting				X
Gill netting				X
Creel survey				
Report				X

## APPENDIX B – Map of sampling locations



Location of sampling sites, Eagle Mountain Reservoir, Texas, 2020-2021. Trap net, gill net, electrofishing, and low-frequency electrofishing stations are indicated by T, G, E, and L, respectively. Boat ramps are indicated with a B. Water level was near full pool at time of sampling.

## APPENDIX C – Historical Catch Rates of Target Species

Historical catch rates of targeted species by gear type for Eagle Mountain Reservoir, Texas, for specified years. GN represents gill netting (reported as number of fish/net night), EF represents electrofishing (reported as number of fish/hour), TN represents trap netting (reported as number of fish/net night), and LFE represents low-frequency electrofishing (reported as number of fish/h).

Gear	Species	Year														
		1988	1990	1992	1995	1998	2000	2001	2002	2004	2005	2008	2009	2010	2011	2012
GN	Blue Catfish			0.0	0.9	0.6		0.9			7.9		10.3			
	Channel Catfish	8.0	5.0	7.0	11.8	3.8		2.3			6.5		9.3			
	White Bass	7.0	9.0	3.0	10.3	11.1		3.7			6.1		25.0			
EF	Gizzard Shad	214.0	291.0	328.7	274.0	589.3	711.3		500.5	437.4		506.0	497.3	484.7	765.3	612.7
	Threadfin Shad	387.0	37.0	155.3	115.3	579.3	670.0		107.3	528.7		633.3	342.0	366.7	1156.0	1008.7
	Bluegill	273.0	212.0	276.0	132.0	47.3	140.0		259.1	264.0		267.3	181.3	272.7	150.7	226.7
	Longear Sunfish	109.0	145.0	0.0	98.0	52.7	148.0		92.5	143.3		219.3	149.3	140.0	92.0	121.3
	Redear Sunfish	32.0	5.0	36.7	18.7	2.0	4.7		15.5	1.3		28.0	37.3	10.0	22.0	8.7
	Spotted Bass	25.0	21.0	54.7	48.0	42.0	18.7		30.4	21.3		31.3	13.3	12.0	16.7	13.3
	Largemouth Bass	173.0	110.0	222.7	150.0	93.3	105.3		64.9	116.0		142.0	96.0	211.3	160.0	171.3
TN	White Crappie	4.0	9.0	4.8	1.4	3.4	3.2							3.7		0.9
	Black Crappie	0.0	0.0	0.0	0.5	6.4	0.7							2.2		1.6

Appendix C,  
continued

Gear	Species	Year							Average
		2012	2013	2016	2017	2018	2020	2021	
GN	Blue Catfish		20.1		26.2			19.7	<b>7.9</b>
	Channel Catfish		6.8		2.4			3.5	<b>6.1</b>
	White Bass		7.5		7.5			5.8	<b>8.9</b>
EF	Gizzard Shad			379.3				458.1	<b>469.8</b>
	Threadfin Shad			1052.7				429.9	<b>506.4</b>
	Bluegill			153.3				160.2	<b>201.0</b>
	Longear Sunfish			76.0				45.9	<b>109.3</b>
	Redear Sunfish			1.3				0.7	<b>15.9</b>
	Spotted Bass			8.0				5.7	<b>24.1</b>
	Largemouth Bass			92.0				61.4	<b>131.8</b>
TN	White Crappie			1.1				12.3	<b>3.8</b>
	Black Crappie			1.6				6.4	<b>2.4</b>
LFE	Blue Catfish					275.5	64.5		<b>182.1</b>



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